

- D. 1.** The ratio of large tables to small tables in the dining room is 8 to 5. There are exactly enough seats for the 240 campers. How many tables of each kind are there?
- 2.** What fraction of the campers sit at small tables?
- 3.** What percent of the campers sit at large tables?

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2.3 Finding Equivalent Ratios

It is often helpful, when forming ratios, to replace the actual numbers being compared with simpler numbers that have the same relationship to each other.

- People prefer Bolda Cola over Cola Nola by a ratio of 17,139 to 11,426, or 3 to 2.
- Students prefer television to radio by a ratio of 100 to 50, or 2 to 1.
- Monthly sales of *Reader's Digest* magazine exceed those of *National Geographic* by 11,044,694 to 6,602,650, or about 3 to 2.

Getting Ready for Problem 2.3

Suppose all classes at your grade level took the cola taste test. The result was 100 to 80 in favor of Bolda Cola.

- How do you scale down this ratio to make it easier to understand?
- What are some other ratios equivalent to this ratio in which the numbers are greater? Finding greater numbers is scaling *up* the ratio.
- How is scaling ratios like finding equivalent fractions for $\frac{100}{80}$? How is it different?

Problem 2.3 Scaling Ratios

One of Ming's tasks at the county zoo's primate house is to mix food for the chimpanzees. The combination of high-fiber nuggets and high-protein nuggets changes as the chimps grow from babies to adults.

Ming has formulas for mixing high-fiber and high-protein nuggets for the chimps.

- Baby chimps: 2 cups high-fiber nuggets and 3 cups high-protein nuggets per serving
- Young adult chimps: 6 cups high-fiber nuggets and 4 cups high-protein nuggets per serving
- Older chimps: 4 cups high-fiber nuggets and 2 cups high-protein nuggets per serving

- A. 1.** What amounts of high-fiber and high-protein nuggets will Ming need when she has to feed 2 baby chimps? 3 baby chimps? 4 baby chimps?

Copy and complete the table below.

Dietary Needs of Baby Chimps

| Number of Baby Chimps | 1 | 2 | 3 | 4 | 5 | 10 |
|------------------------------|---|---|---|---|---|----|
| Cups of High-Fiber Nuggets | ■ | ■ | ■ | ■ | ■ | ■ |
| Cups of High-Protein Nuggets | ■ | ■ | ■ | ■ | ■ | ■ |

- 2.** What patterns do you see in your table?
- 3.** Ming puts 48 cups of high-protein nuggets into the baby chimp mix. How many cups of high-fiber nuggets does she put into the mix? Explain.
- 4.** Ming has a total of 125 cups of mix for baby chimps. How many cups of high-fiber nuggets are in the mix? Explain.
- B. 1.** What is the ratio of high-fiber to high-protein nuggets for young adult chimps?
- 2.** Scale this ratio up to show the ratio of high-fiber to high-protein nuggets that will feed 21 young adult chimps.
- 3.** To feed 18 young adults, you need 108 cups of high-fiber nuggets and 72 cups of high-protein nuggets. Show how to scale down this ratio to feed 3 young adult chimps.

- C. 1.** Darla wants to compare the amount of high-fiber nuggets to the total amount of food mix for young adult chimps. She makes this claim:

“High-fiber nuggets are $\frac{3}{2}$ of the total.”

Lamar says Darla is wrong. He makes this claim:

“High-fiber nuggets are $\frac{3}{5}$ of the total.”

Who is correct? Explain.

- 2.** What fraction of the total amount of food mix for older chimps is high-fiber nuggets?
- 3.** Suppose the ratio of male chimps to female chimps in a zoo is 5 to 4. What fraction of the chimps are male?
- 4.** Suppose $\frac{2}{3}$ of the chimps in a zoo are female. Find the ratio of female chimps to male chimps in that zoo.



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